University of the West of Scotland

Module Descriptor

Session: 2024-25

Title of Module: Python for Accounting Students

Code:	**SCQF Level: 10 (Scottish Credit and Qualifications Framework)**	**Credit Points: 20**	**ECTS: (European Credit Transfer Scheme)**
School:	School of Business and Creative Industries		
Module Co-ordinator:	Dr Michael Guo		

Summary of Module
This module is specifically designed for accounting students with no prior knowledge of Python. It aims to introduce students to Python's application within the accounting field. The module covers several key areas: ● **Python Basics**: Teaching the fundamental concepts of Python programming. ● **Data Analysis and Visualisation**: Teaching how to analyse and visualise accounting data using Python. ● **Automation**: Demonstrating how to automate repetitive accounting tasks with Python scripts. ● **Introduction to Machine Learning**: Providing an understanding of how machine learning can be applied in accounting. The module employs a hybrid learning approach, combining face-to-face lab sessions, online drop-in clinics, and additional resources such as tutorial videos and Q&A videos. This method is specifically designed to accommodate students from diverse backgrounds, including those with no prior coding experience. ● The **face-to-face lab sessions** are essential for maintaining structured and consistent engagement, ensuring students actively participate in their learning process. ● The **online drop-in clinic** offers personalised tutorials and guidance, allowing for one-on-one interaction with lecturers. ● The **tutorial videos and Q&A videos** are important resources that enable students to learn at their own pace, revisiting complex topics as needed. This

approach is particularly beneficial for students who need multiple explanations to fully grasp the concepts.

For assessment, the module uses a **digital portfolio approach**, which includes video submissions of the coding process accompanied by personal commentary and reflection, as well as online Google Colab notebooks presenting the codes. Mandatory video topics cover the Python Basics, ensuring a foundational understanding for all students. Beyond the compulsory topics, students are encouraged to select from Data Analysis and Visualization, Automation, or Introduction to Machine Learning for their subsequent submissions. This choice is based on their individual comprehension and areas of strength within these topics, allowing them to showcase their proficiency in areas where they feel most confident.

The digital portfolio serves as a tangible showcase of students' skills and understanding, providing an asset for job hunting. It offers potential employers concrete evidence of the student's coding abilities, problem-solving skills, and capacity for reflective learning.

Module Delivery Method

Face-To-Face	Blended	Fully Online
☐	☒	☐

Face-To-Face
Term used to describe the traditional classroom environment where the students and the lecturer meet synchronously in the same room for the whole provision.

Fully Online
Instruction that is solely delivered by web-based or internet-based technologies. This term is used to describe the previously used terms distance learning and e learning.

Blended
A mode of delivery of a module or a programme that involves online and face-to-face delivery of learning, teaching and assessment activities, student support and feedback. A programme may be considered “blended” if it includes a combination of face-to-face, online and blended modules. If an online programme has any compulsory face-to-face and campus elements it must be described as blended with clearly articulated delivery information to manage student expectations.

Campus(es) for Module Delivery

The module will **normally** be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
☒	☐	☐	☒	☐	☐	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit). N/A					
Term 1	☐	Term 2	☒	Term 3	☐

Learning Outcomes: (maximum of 5 statements) **These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module.** At the end of this module the student will be able to:	
L1	Master the fundamental concepts of Python programming
L2	Employ Python to conduct data analysis and visualisation for accounting purposes
L3	Use Python scripts to automate routine accounting tasks
L4	Acquire an understanding of how machine learning can be integrated into accounting practices using Python

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level **10** Students will develop a deep understanding of Python programming fundamentals, data analysis, automation, and machine learning within an accounting context. They will learn to:

	● Apply Python basics to solve accounting-related problems, enhancing their technical toolkit. ● Use data analysis and visualisation techniques in Python to interpret and present accounting data effectively. ● Implement automation to optimise accounting tasks, increasing efficiency and accuracy. ● Explore the potential of machine learning in transforming accounting practices and decision-making processes.
Practice: Applied Knowledge and Understanding	SCQF Level **10** Through practical exercises, students will apply their knowledge by: ● Designing and executing Python scripts to analyse accounting datasets. ● Developing automation solutions to common accounting tasks. ● Experimenting with basic machine learning models to predict financial outcomes or identify trends in accounting data.
Generic Cognitive skills	SCQF Level **10** Students will enhance their cognitive abilities by: ● Analysing accounting problems and devising effective Python-based solutions. ● Evaluating the results of data analyses and the implications of machine learning models in accounting.
Communication, ICT and Numeracy Skills	SCQF Level **10** The module will strengthen students' competencies in key areas: ● Communicating technical information clearly and effectively through digital portfolios, including video presentations and Google Colab notebooks. ● Using Python for coding, data analysis, and visual representation of financial information.

	● Applying numeracy skills in the context of data analysis.
Autonomy, Accountability and Working with others	SCQF Level **10** Students will be encouraged to work independently and collaboratively: ● Demonstrating autonomy in learning by managing their projects, seeking resources, and solving problems independently. ● Being accountable for their work, including adhering to ethical guidelines in data handling and presenting honest analyses. ● Collaborating with peers during lab sessions, fostering a cooperative learning environment and enhancing team-working skills.

Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code:	**Module Title:**
	Other:	
Co-requisites	**Module Code:**	**Module Title:**

Learning and Teaching
The current position is that 10 hours per credit point is the accepted working norm – thus for a 20 point module, 200 notional student effort hours would be expected. For a standard face-to-face delivery over a term, this should equate to a maximum of 36 scheduled contact hours.

Note that the categorisation of the learning activities has been removed I.e. Scheduled, Placement and Independent will no longer appear beside the activities.

Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lab sessions	20
Asynchronous Lecture/Class Activity (i.e. online clinics and lecture/tutorial videos, and Q&A videos)	16
Independent Study	164
	200 Hours Total

****Indicative Resources: (eg. Core text, journals, internet access)**
Core Text: Sweigart, A. (2019). Automate the boring stuff with Python: practical programming for total beginners. No Starch Press. Vast Online Supporting Materials on Python: Resources available from FreeCodeCamp, Harvard's CS50, and other reputable sources provide extensive learning materials and tutorials.
(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance Requirements
In line with the Academic Engagement Procedure, Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions,

course-related learning resources including those in the Library and on the VLE, and complete assessments and submit these on time. Please refer to the Academic Engagement Procedure at the following link: Academic engagement procedure For the purposes of this module, academic engagement equates to the following: Attending face-to-face lab sessions and engaging with the provided materials, including tutorial videos and Q&A videos, available on the VLE.

Equality and Diversity
UWS Equality and Diversity Policy Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	Accounting, Finance and Law
Assessment Results (Pass/Fail)	Yes ☐ No ☒
School Assessment Board	Business and Creative Industries
Moderator	
External Examiner	N/A
Accreditation Details	N/A
Changes/Version Number	1.0

Assessment: (also refer to Assessment Outcomes Grids below)
Digital portfolio (100%): online video submission and Google Colab notebooks

For assessment, the module uses a digital portfolio approach, which includes video submissions of the coding process accompanied by personal commentary and reflection, as well as online Google Colab notebooks presenting the codes. Mandatory video topics cover the Python Basics, ensuring a foundational understanding for all students. Beyond the compulsory topics, students are encouraged to select from Data Analysis and Visualization, Automation, or an Introduction to Machine Learning for their subsequent submissions. This choice is based on their individual comprehension and areas of strength within these topics, allowing them to showcase their proficiency in areas where they feel most confident. The digital portfolio serves as a tangible showcase of students' skills and understanding, providing a valuable asset for job hunting. It offers potential employers concrete evidence of the student's coding abilities, problem-solving skills, and capacity for reflective learning.
(N.B. (i) **Assessment Outcomes Grids** for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An **indicative schedule** listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Handbook.)

Assessment Outcome Grids (Footnote A.)

Component 1						
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Creative output/ Audiotapes/ Videotapes/ Games/ Simulations	X	X	X	X	100%	0

Footnotes
A. Referred to within Assessment Section above. 1. More than one assessment method can be used to assess individual learning outcomes.
B. Identified in the Learning Outcome Section above. Please choose assessment type from list below:

Exam - Unseen closed book (standard)
Exam - Seen closed book
Exam - Unseen open book
Exam - Seen open book
Case study
Class test (written)
Design/ Diagram/ Drawing/ Photograph/ Sketch
Dissertation/ Project report/ Thesis
Essay
Laboratory/ Clinical/ Field notebook
Portfolio of written work
Report of practical/ field/ clinical work
Review/ Article/ Critique/ Paper
Workbook/ Laboratory notebook/ Diary/ Training log/ Learning log
Class test (practical)
Clinical/ Fieldwork/ Practical skills assessment/ Debate/ Interview/ Viva voce/ Oral
Creative output/ Audiotapes/ Videotapes/ Games/ Simulations
Demonstrations/ Poster presentations/ Exhibitions
Performance/ Studio work/ Placement/ WBL/ WRL assessment
Portfolio of practical work
Presentation
Objective Structured Clinical Examinations (OSCEs)
Objective Structured Professional Examinations (OSPREs)

Change Control

What	When	Who
Further guidance on aggregate regulation and application when completing template		
Updated contact hours		